Digital Video Systems Development (DVSD)

PM ITTS STOC Industry Days II
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Objective Statement

Develop, integrate, advance and provide digital video products and standards that will satisfy the needs of multi-service T&E range users in the areas of digital image acquisition, transfer, storage, processing and analysis.

Program Goals

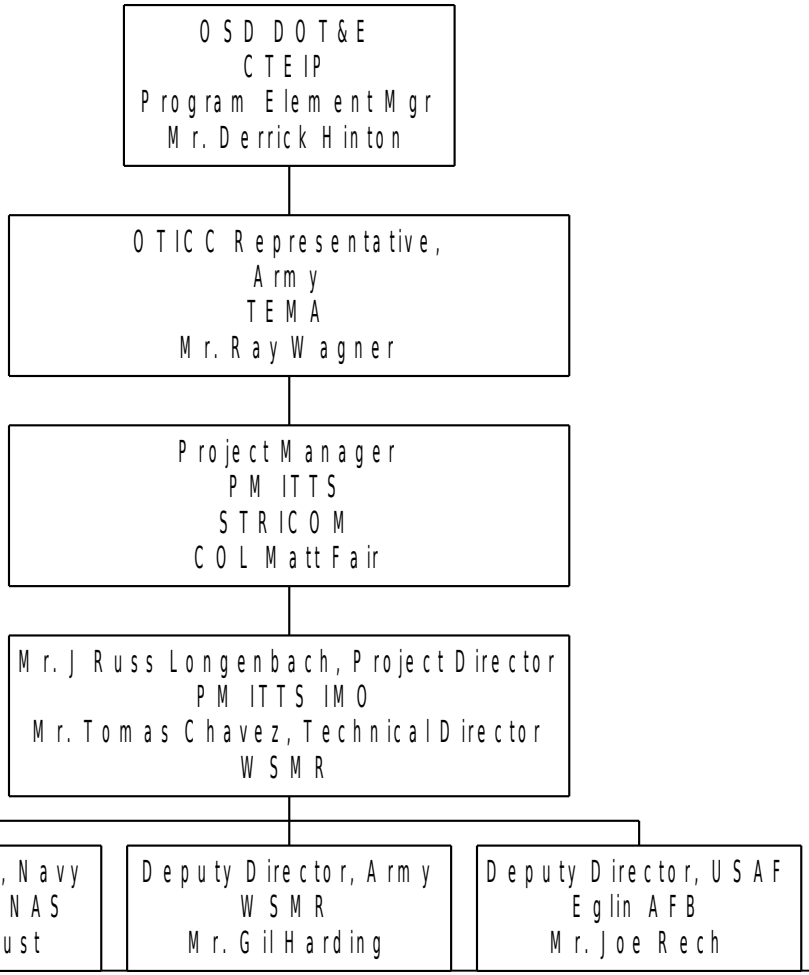
T&E Process Improvement

- Reduce test cost associated with film
- Reduce environmental issues of film
- Expedite test conduct
- Improve test products
- Expedite data distribution
- Increase data shelf life

Digital Video Systems Development

Program Team

DVSD Program Structure

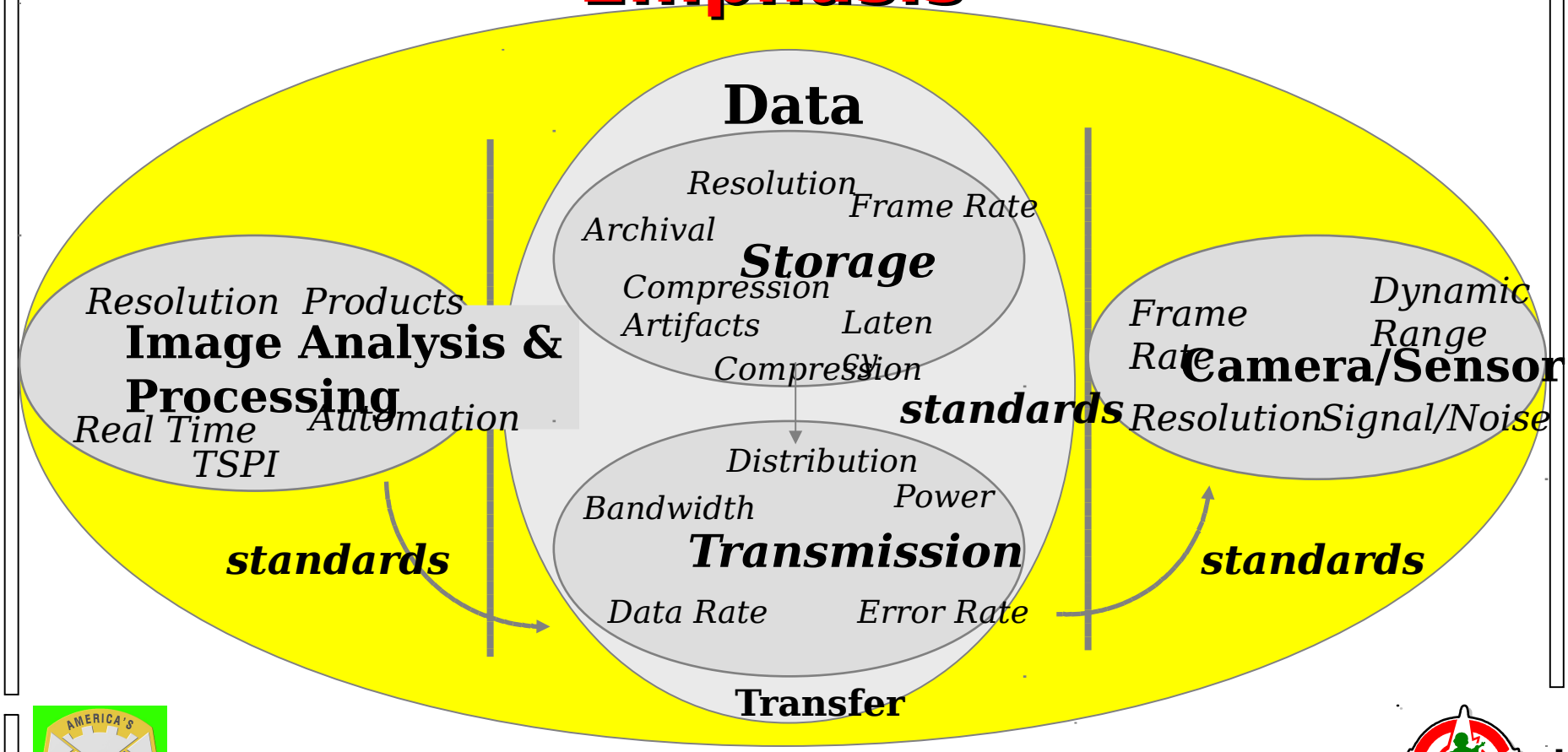


PM-ITTS IMO

Functional Areas

- **Project will have service lead for each category/segment of system development:**
  - **Camera/Sensor Systems - Navy (NAWC-AD)**
  - **Data Transmission/Storage - Army (WSMR-ID)**
  - **Image Analysis/Processing - USAF (46TW-Eglin)**

Systems Engineering Emphasis



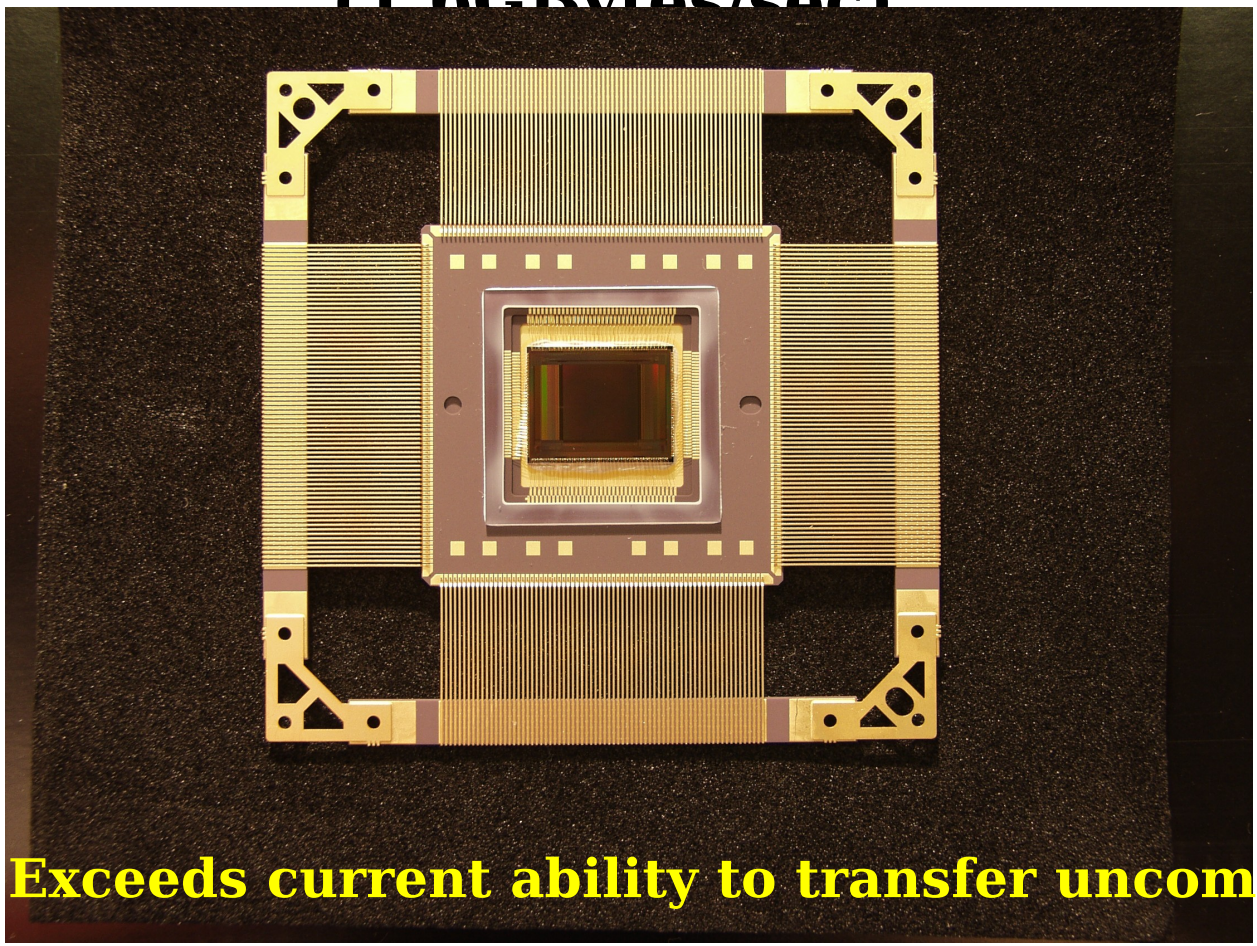
Modular, Adaptable, Reconfigurable

Systems Engineering

Challenges: Example

512 x 512 CMOS array @ 5000 fps

(1.6GBytes/sec)



Exceeds current ability to transfer uncompressed da

DVSD Strategy

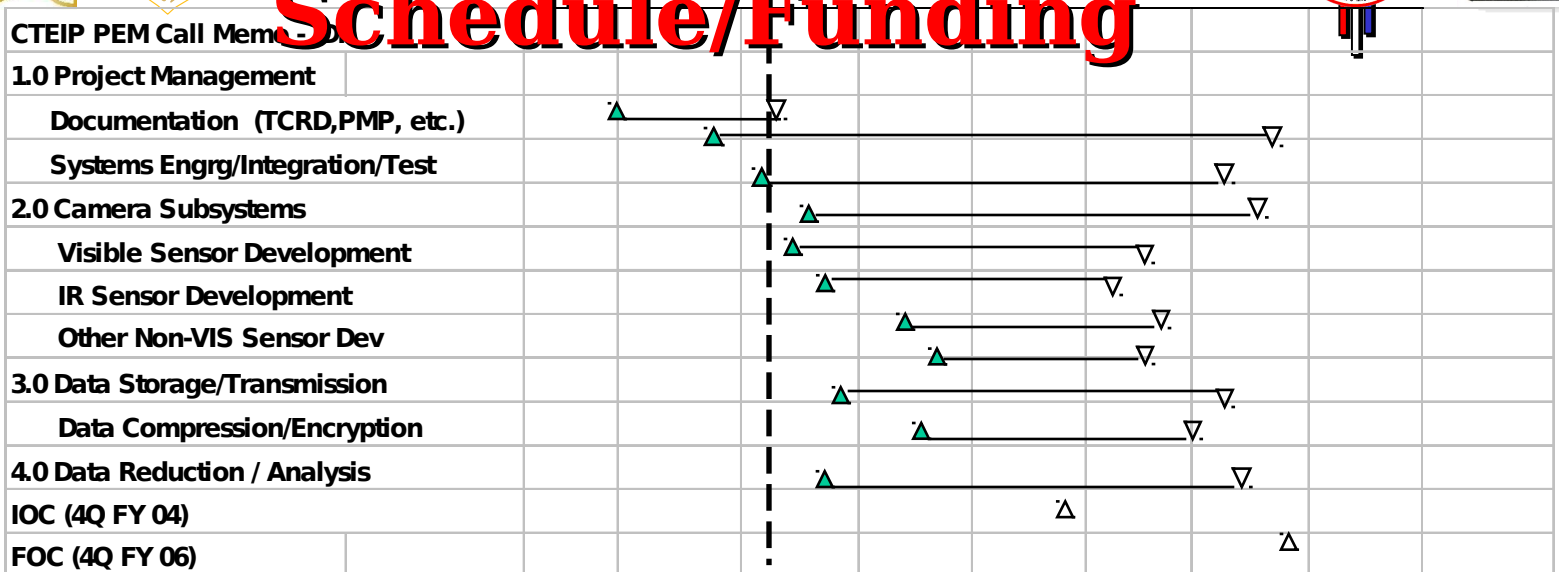
- **Leverage existing technology and commercial items (CI).**
- **Leverage legacy programs**
- **Assess current range methodologies**
- **Sponsor upgrades and augmentations where needed**
- **Sponsor new developments where needed**
- **Incrementally build and integrate capabilities into total system configuration**

Adopt – Adapt - Develop

Status

- **IDP (10 Jan 02 revision)in approval phase**
  - **Army OTICC Rep Approved**
  - **Air Force OTICC Rep Approved**
  - **Navy OTICC Rep Pending**
- **IDP - overarching plan for transformation to Digital Video (DV) environment**
- **TCRD - Receiving inputs from ranges**
- **PMP - Draft document in process**
- **Project to be briefed to RCC subgroups**
  - **Telecommunication & Timing Group (TTG) Mar 02**
  - **Optical Systems Group (OSG) Apr 02**
  - **Data Reduction & Computer Group (DRCG) May 02**
- **Awaiting OSD funds release - late Mar 02**

Program Schedule/Funding



Dollars in Thousands	Prior	2000	2001	2002	2003	2004	2005	2006	2007	2008
Total RDTE Required	**0**	**0**	**$**	**$$$**	**$$$$**	**$$$$**	**$$$$**	**$$$**	**0**	
CTEIP Funded	**0**	**0**	**$**	**0**	—	—	—	—	—	
Congressional Add	**0**	**0**	**0**	**$$$**	—	—	—	—	—	
$ = < $1M										
$$ = $1M - $5M										
$$$ = $5M - $10M										
$$$$ = $10 - $20M										
Quantities	0	0	0	0	0	0	0	1		

FY02 Program

- **FY02 DVSD project restructured to execute Congressional Add - $5.5M**
- **DVSD selected elements based on:**
  - **Usefulness to immediate range applications**
  - **Incremental development**
  - **Advancement of key DV technologies**

FY02 Program Elements

- **Project management and systems engineering (WBS 1.0)**
  - **Systems engineering**
  - **Validation of requirements**
  - **Technical Standards**
  - **Project documentation**
- **High Resolution Sensors (WBS 2.0)**
  - **4 mega pixel array 500 fps w/EFF shutter**
  - **Visible spectrum only**

FY02 Program Elements

- **Storage System Upgrade (WBS 3.0)**
  - **Augment HSMM high-end system to reduce size**
- **High Bandwidth Data Compression (WBS 3.0)**
  - **Leverage NASA/DOD programs**
  - **Minimum 4:1 lossless algorithm at full camera data rates**
  - **Prototype using FPGA architecture**
- **DVSD Development Kit (WBS 1.0/2.0/3.0/4.0)**
  - **Self-contained, mobile platform (field node) with camera, HSMM storage, network constructs, transitory archival, field analysis and processing**

FY02 Program Elements

- **Data processing and analysis (WBS 3.0/4.0)**
  - **Prototype data analysis test bed**
  - **Adapt DVL Multi-Media Management Subsystem (MMMS) for DVSD archival and retrieval**

Acquisition/Contracting Previous 7 Aug 2001 Strategy

- Multiple Acquisitions via TO's (STRICOM), WAO's (Ranges)
- Competitive Awards (STOC, Other Contract Vehicles)
- System Integrator: Gov't Team w/SETA Support
- Development Cycle: FY 02-06
- Limited Competitive Environment (Technology Driven)
- Technology: VIS/IR Chipsets, DWDM/OC-192 Fiber Net, Distributed Storage, Commercial/Gov't DV Editing Tools
- Typical Vendor Base: Photobit, DRS, Sarnoff, [illegible] Research, PsiTech, Cisco Systems

Acquisition/Contracting

Revised FY 02 Approach

- **Leverage existing contract vehicles where appropriate**
- **Award new contracts where necessary**
- **Coordinate w/RCC and conduct standards validation**
- **Perform In-house development/testing only where appropriate**
- **Deliver integrated development kit**

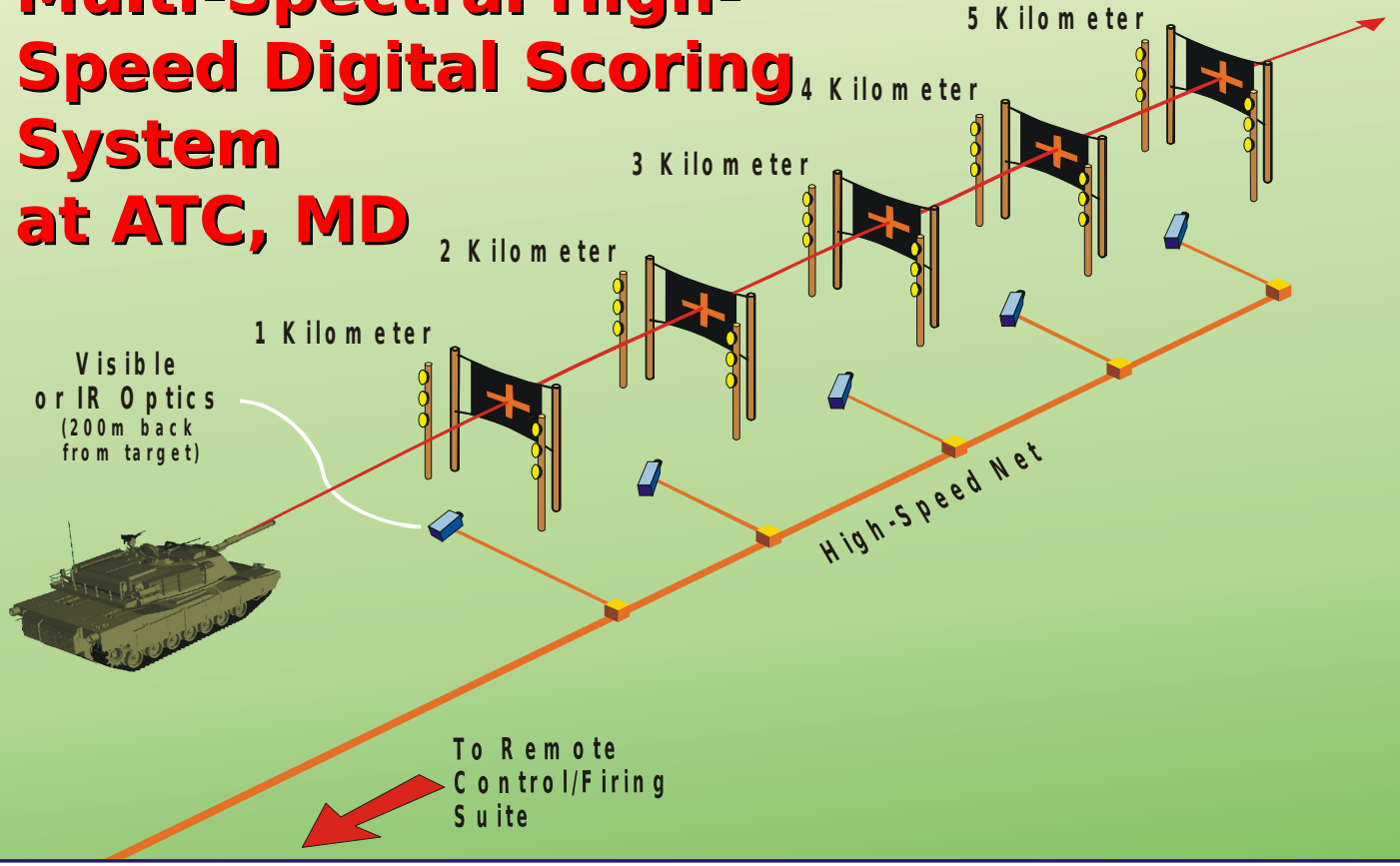
Adopt – Adapt - Develop

DVSD FY02
Development Kit Emphasis

- **Demonstrate and evaluate range application of fundamental DVSD technologies**
- **Applicable to multi-service range scenarios**
  - **Impacts**
  - **Launches**
  - **Effects testing (e.g. blast, thermal, flight deck, etc.)**

Example Application

Multi-Spectral High-Speed Digital Scoring System at ATC, MD



Legacy Contract / In-house Resources

- **Project Management**
  - **STRICOM/Service Deputies, Range representatives**
- **Camera Systems**
  - **DRS, Photobit**
- **Data Systems**
  - **Newtech, Psitech**
- **Analysis**
  - **Sarnoff, Photosonics**

SUMMARY

- **Solid functional tri-service IPT Established.**
- **Congressional add modified original strategy.**
- **One year FY02 funding will provide deliverable field products for Range assessment.**
- **Considered key technology thrust area for T&E**
- **Incremental structure will continue**